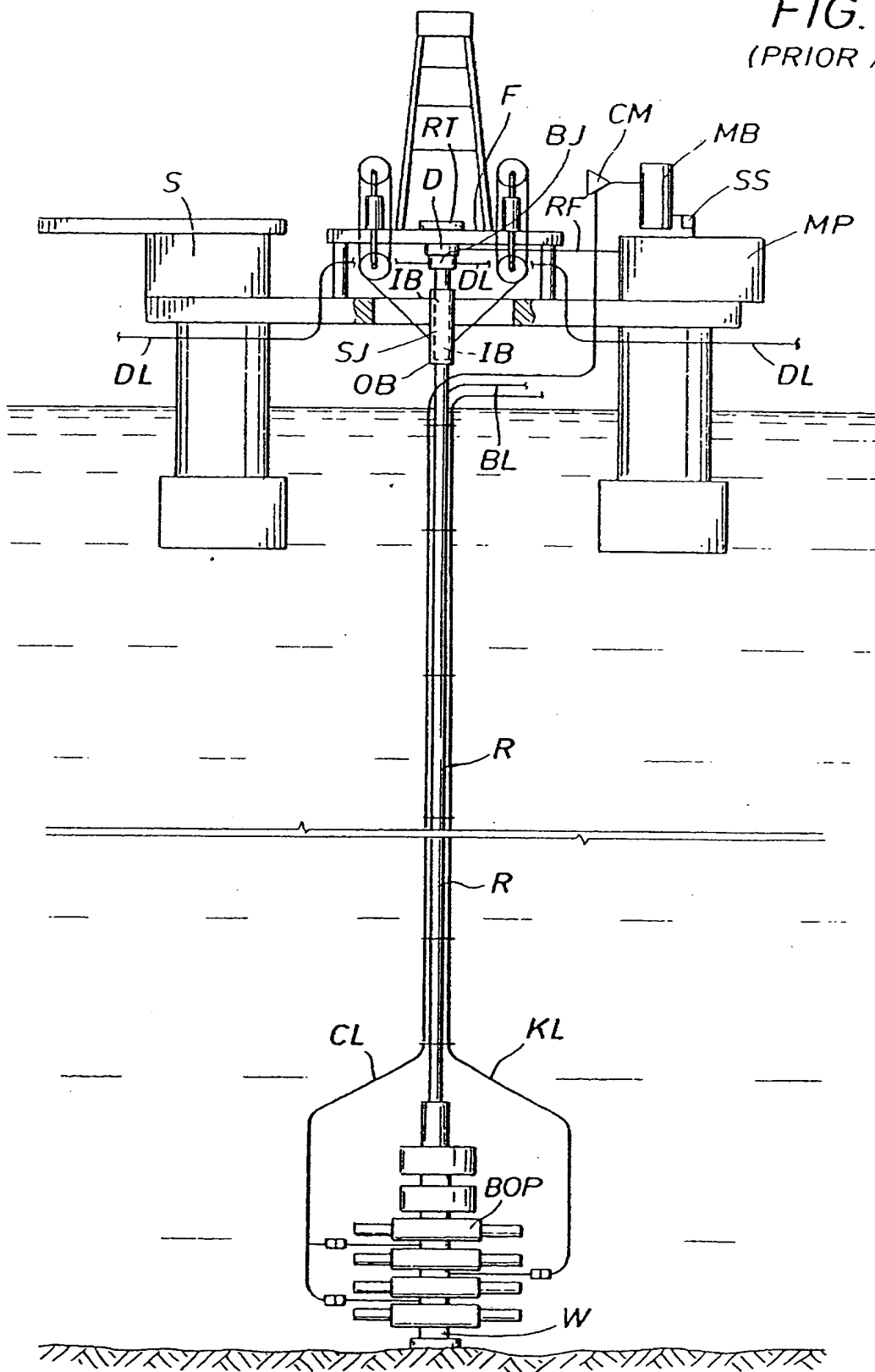
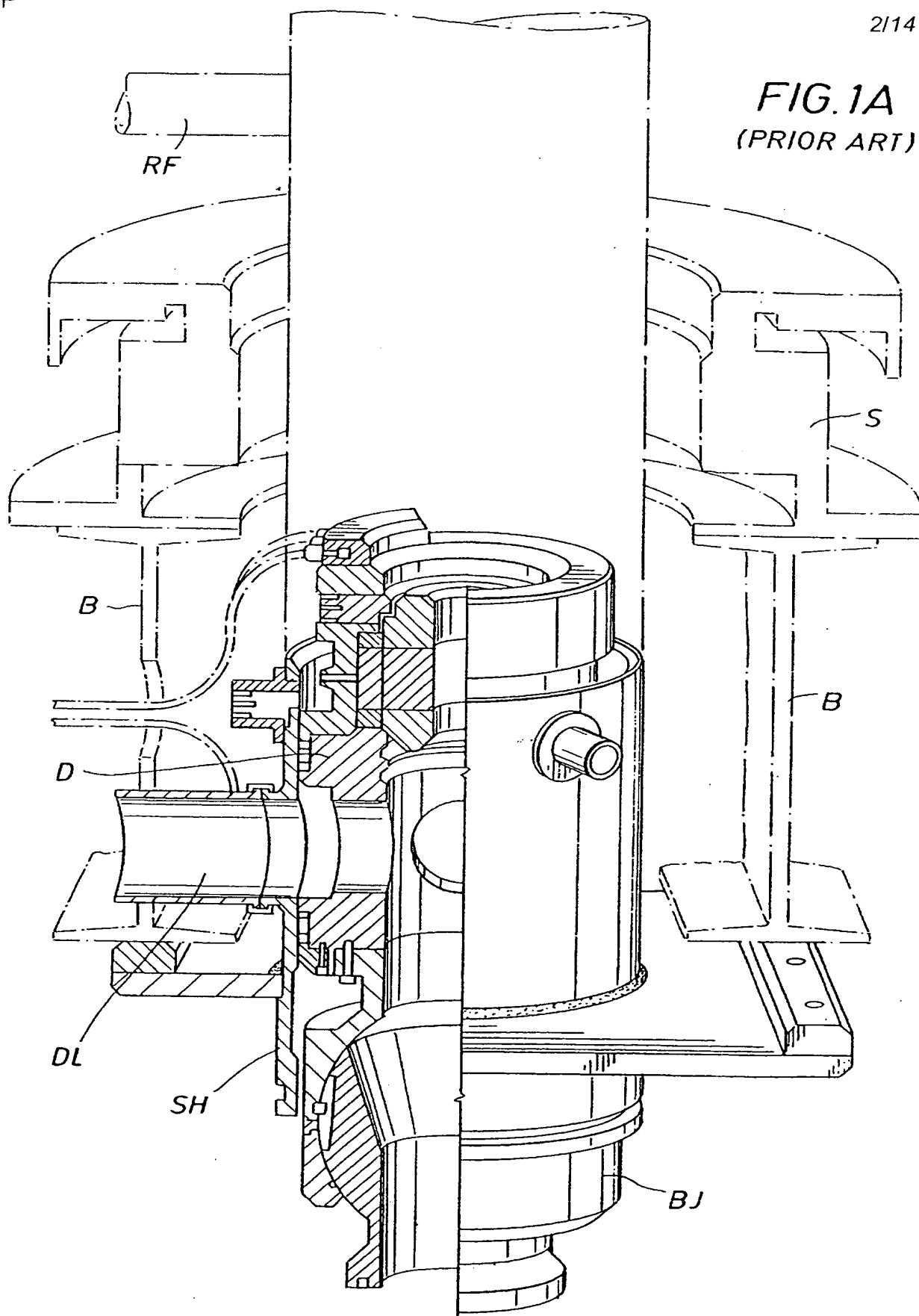


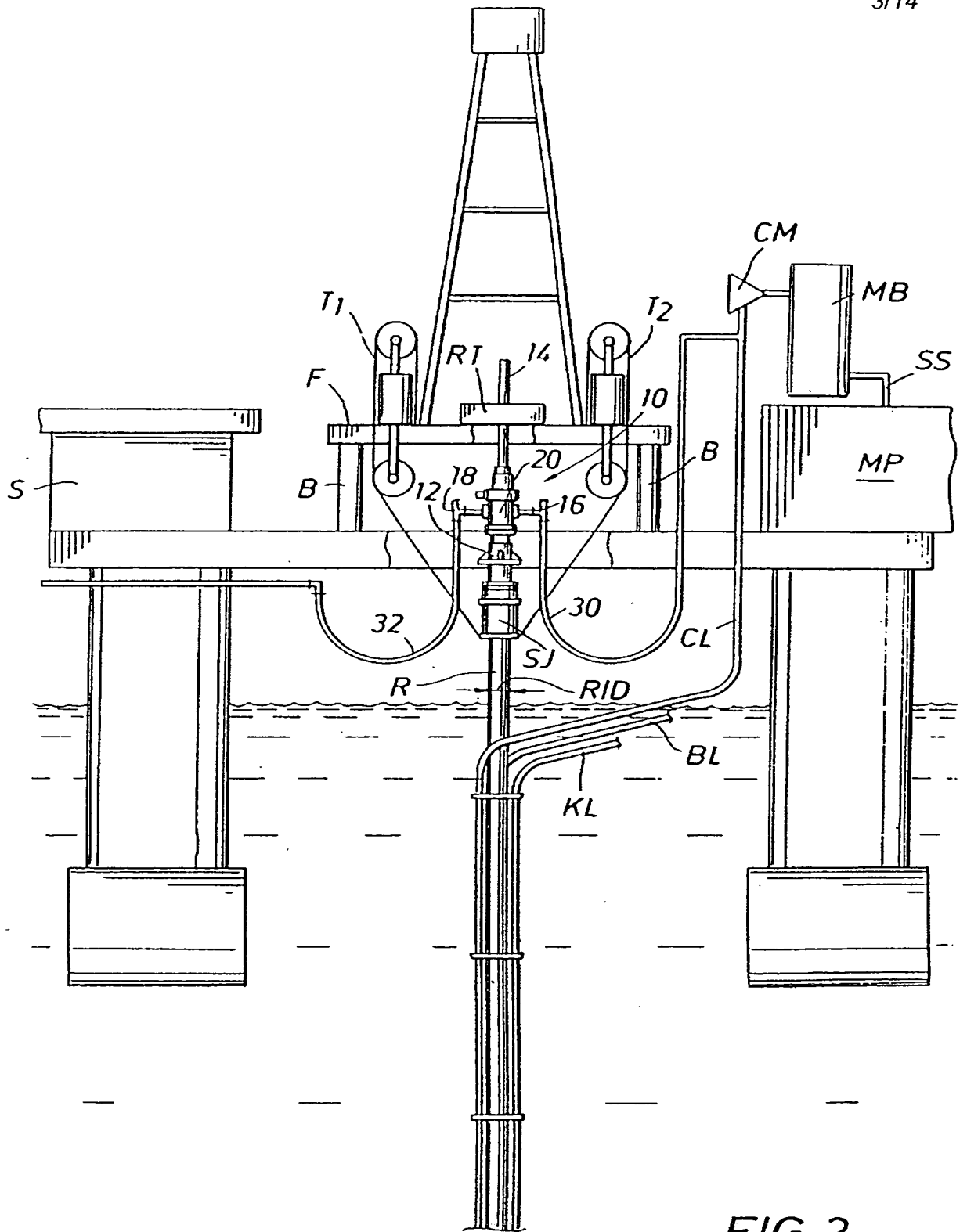
1/14

FIG. 1  
(PRIOR ART)



**FIG. 1A**  
(PRIOR ART)

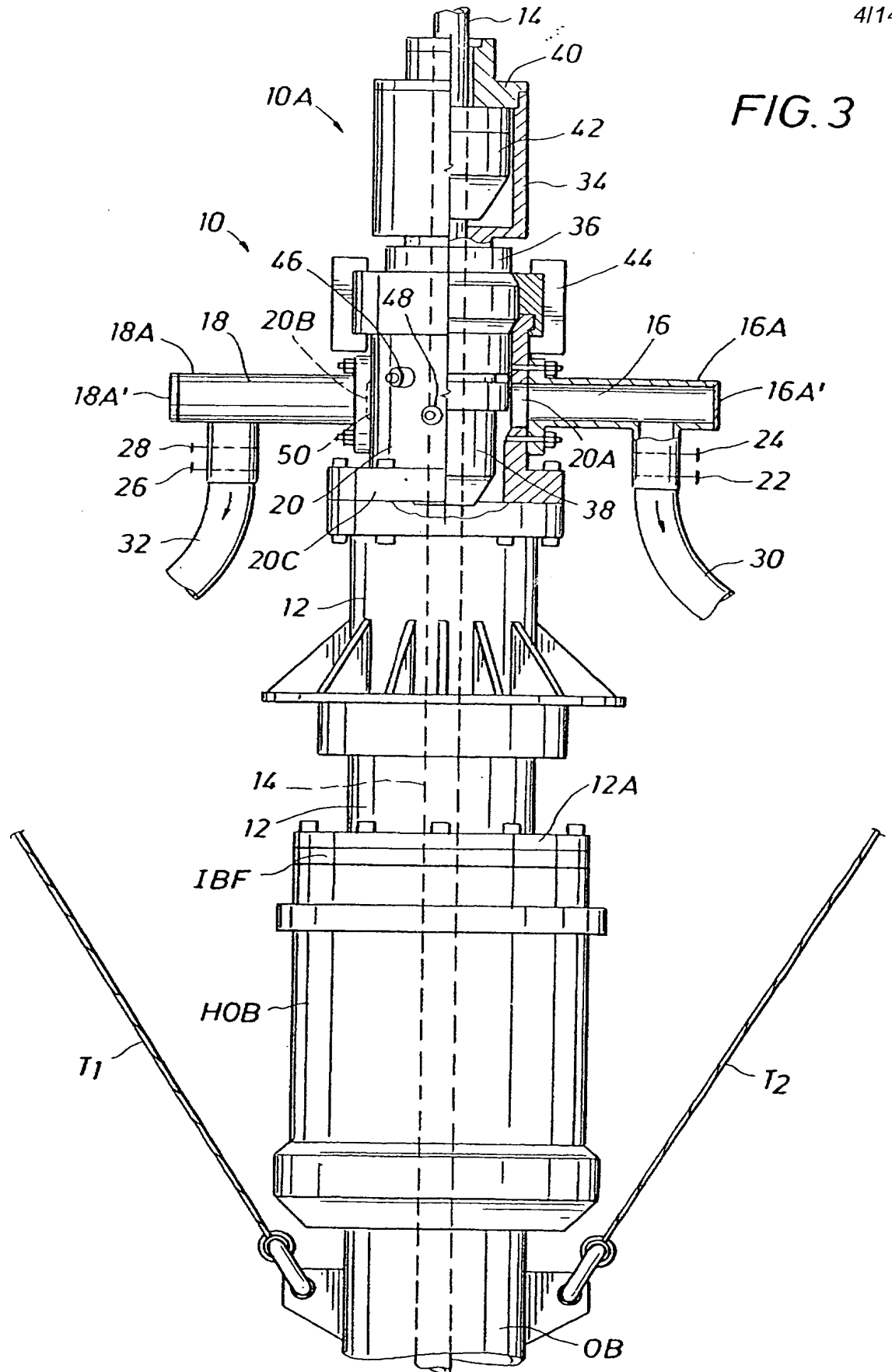




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4/14

FIG. 3



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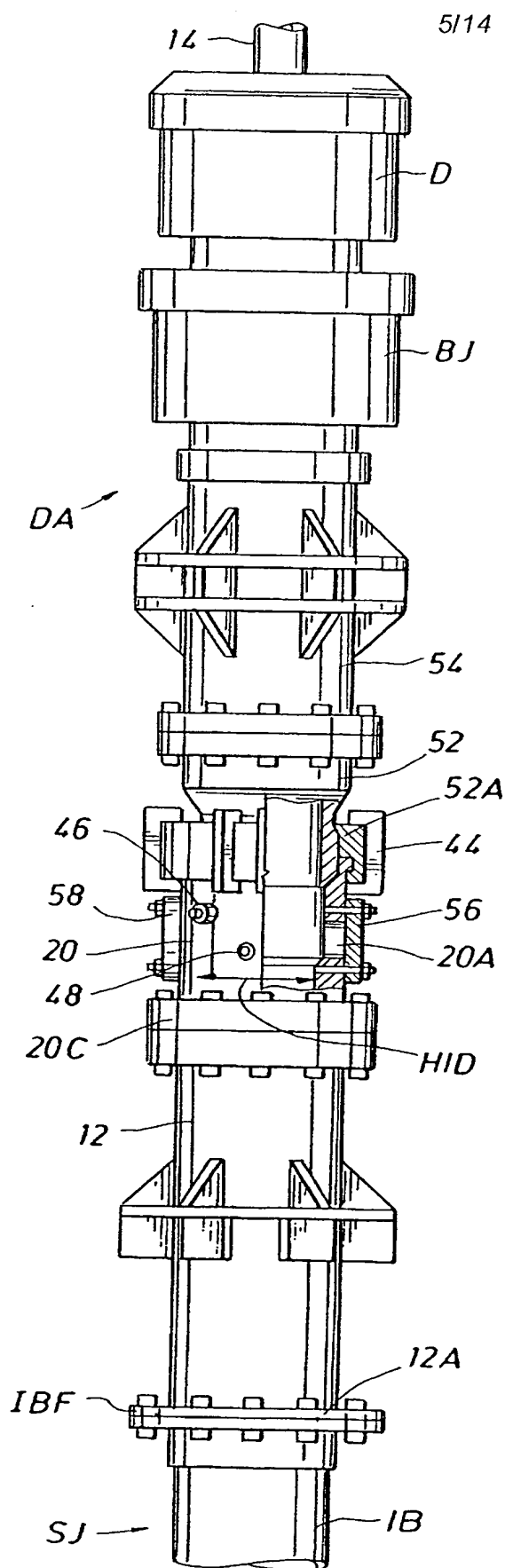


FIG. 4

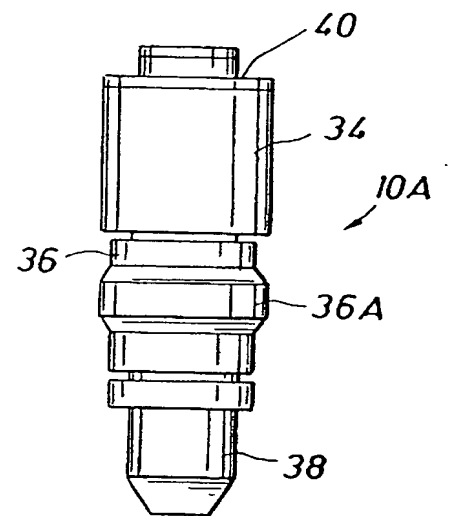


FIG. 5



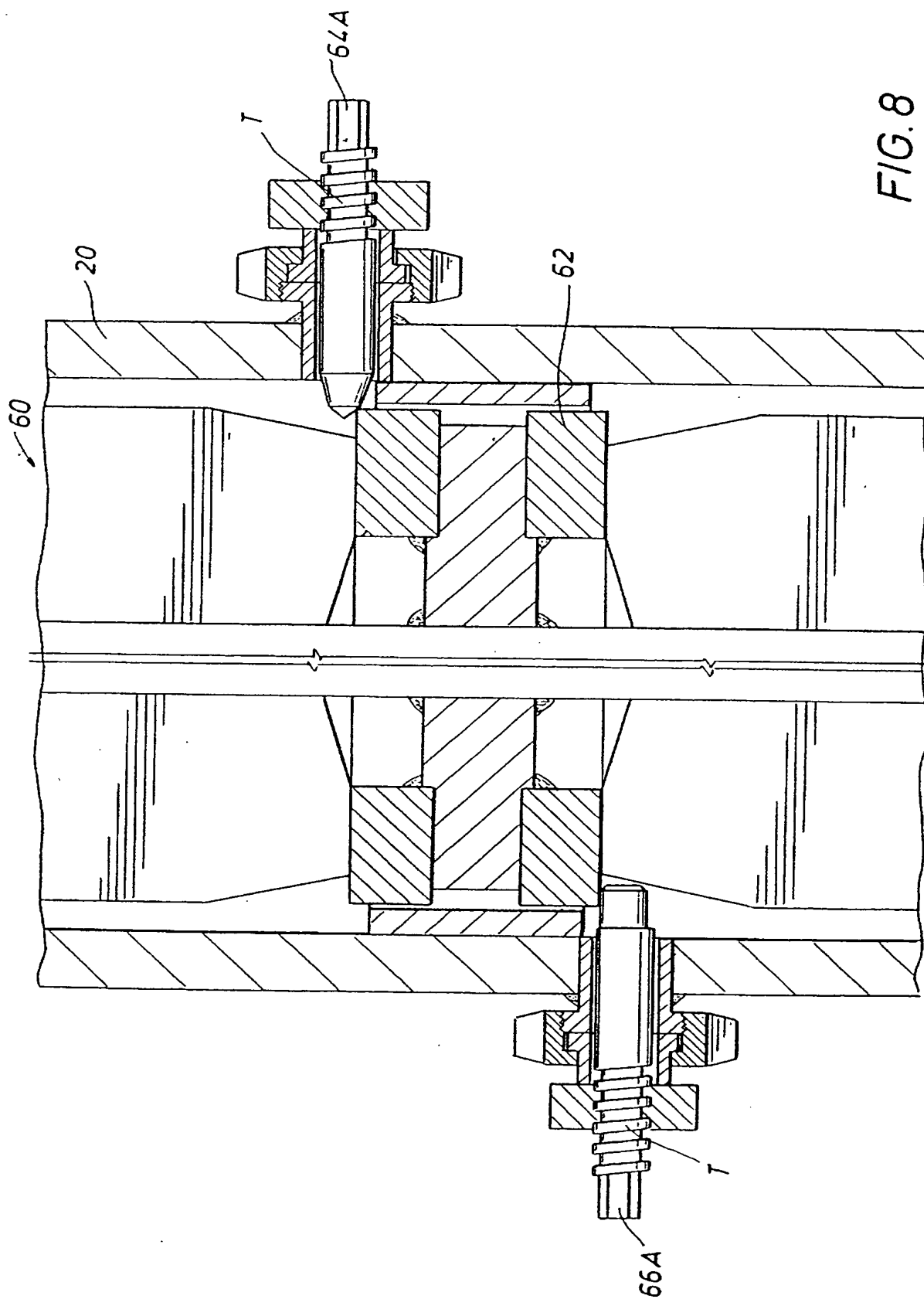
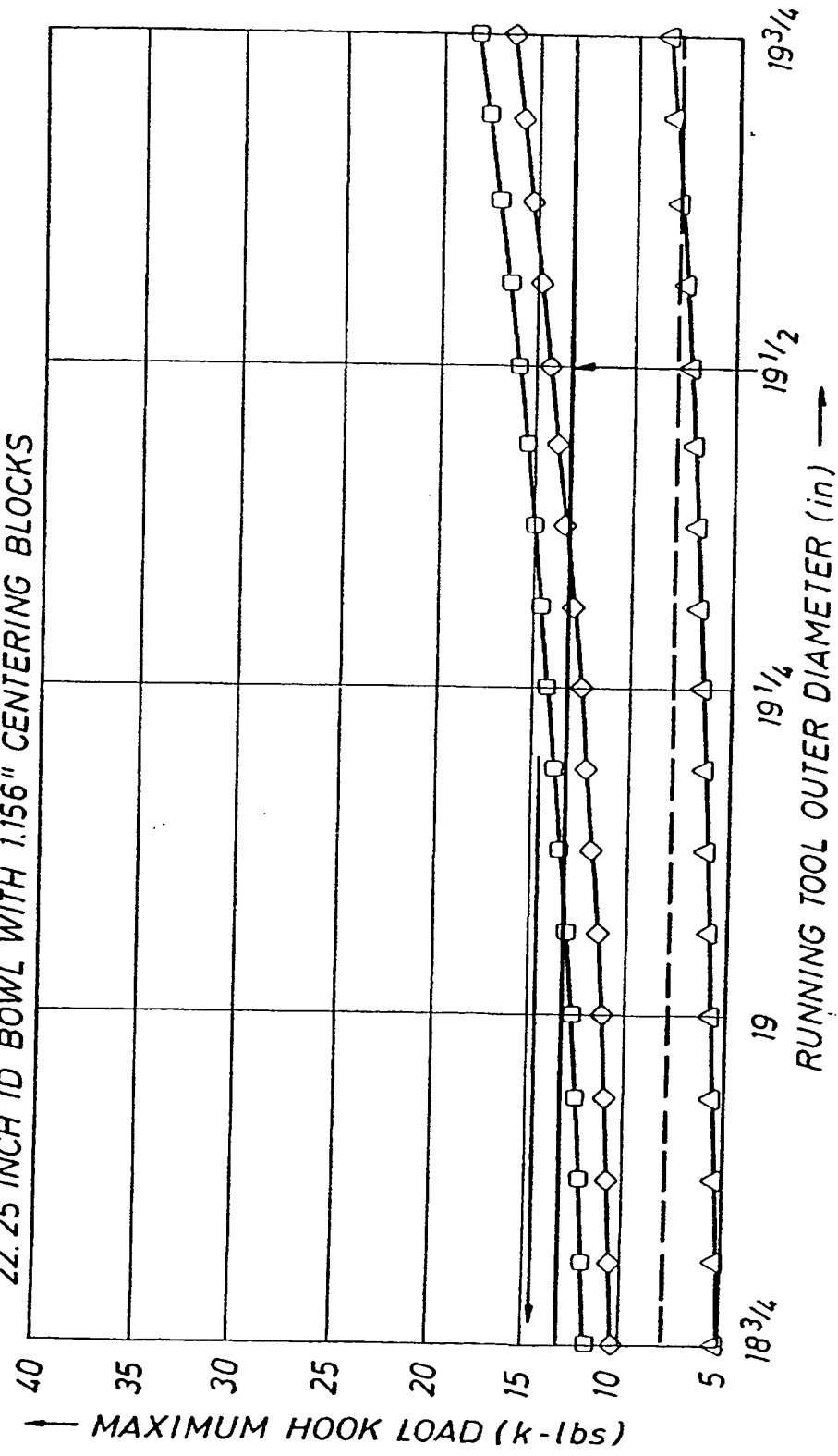


FIG. 9

—◇— MAX HOOK LOAD - ECENTRIC RUNNING TOOL  
 —□— MAX HOOK LOAD - TAPERED PINS  
 —△— MAX PIN LOAD - FULLY ECENTRIC RUNNING TOOL WITHOUT CENTERING BLOCKS  
 ——— WORSE CASE INNER BARREL WEIGHT  
 - - - MOST LIKELY INNER BARREL WEIGHT  
 40,000 psi YIELD STRENGTH IN MATERIAL  
 1.5 INCH MINIMUM PIN TAPER DIAMETER  
 22.25 INCH ID BOWL WITH 1.156" CENTERING BLOCKS



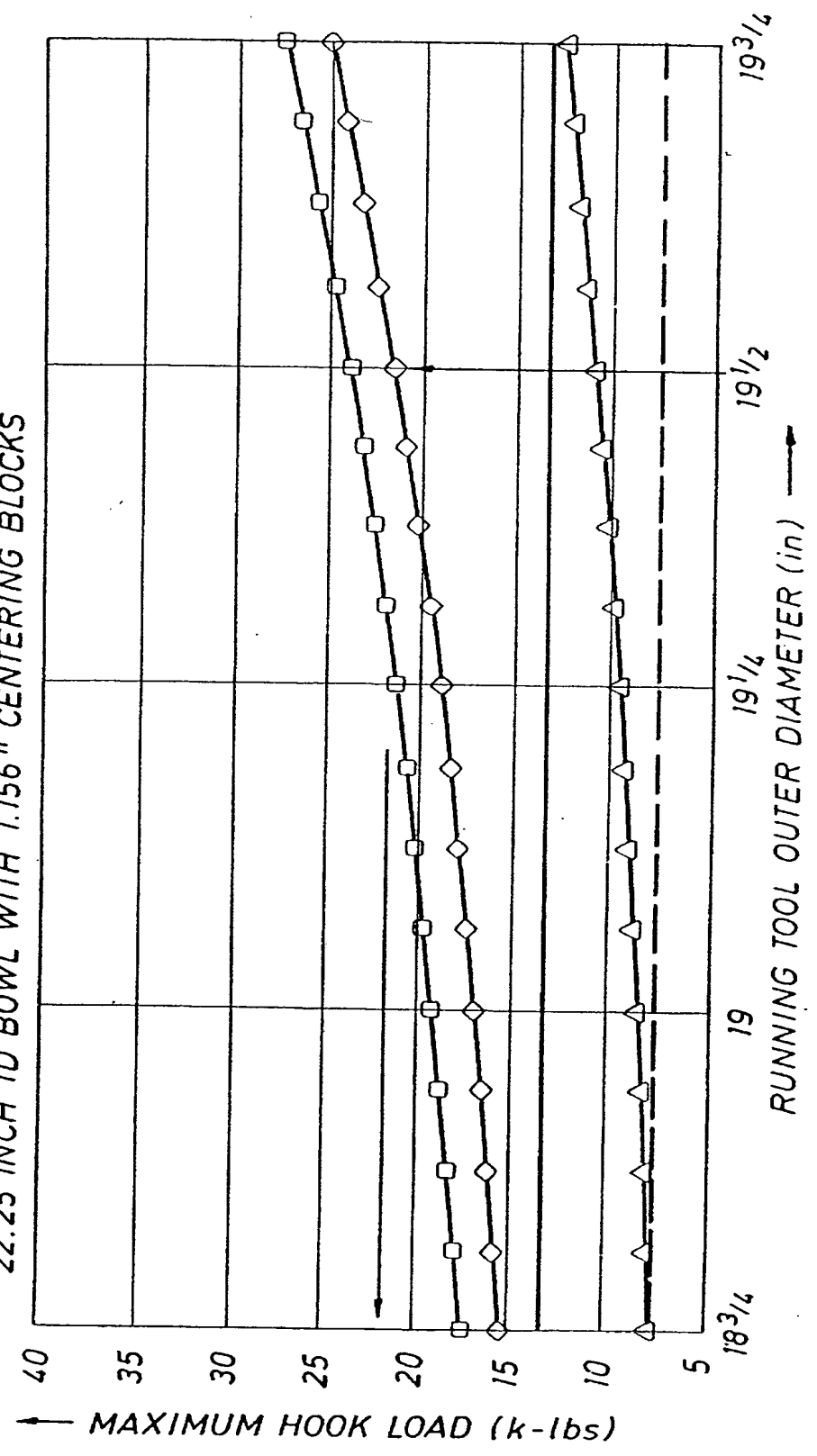


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9/14

—◇— MAX HOOK LOAD - ECENTRIC RUNNING TOOL  
 —□— MAX HOOK LOAD - TAPERED PINS  
 —△— MAX PIN LOAD - FULLY ECENTRIC RUNNING TOOL WITHOUT CENTERING BLOCKS  
 ——— WORSE CASE INNER BARREL WEIGHT  
 - - - MOST LIKELY INNER BARREL WEIGHT  
 60,000 psi YIELD STRENGTH IN MATERIAL  
 1.5 INCH MINIMUM PIN TAPER DIAMETER  
 22.25 INCH ID BOWL WITH 1.156" CENTERING BLOCKS

FIG. 10

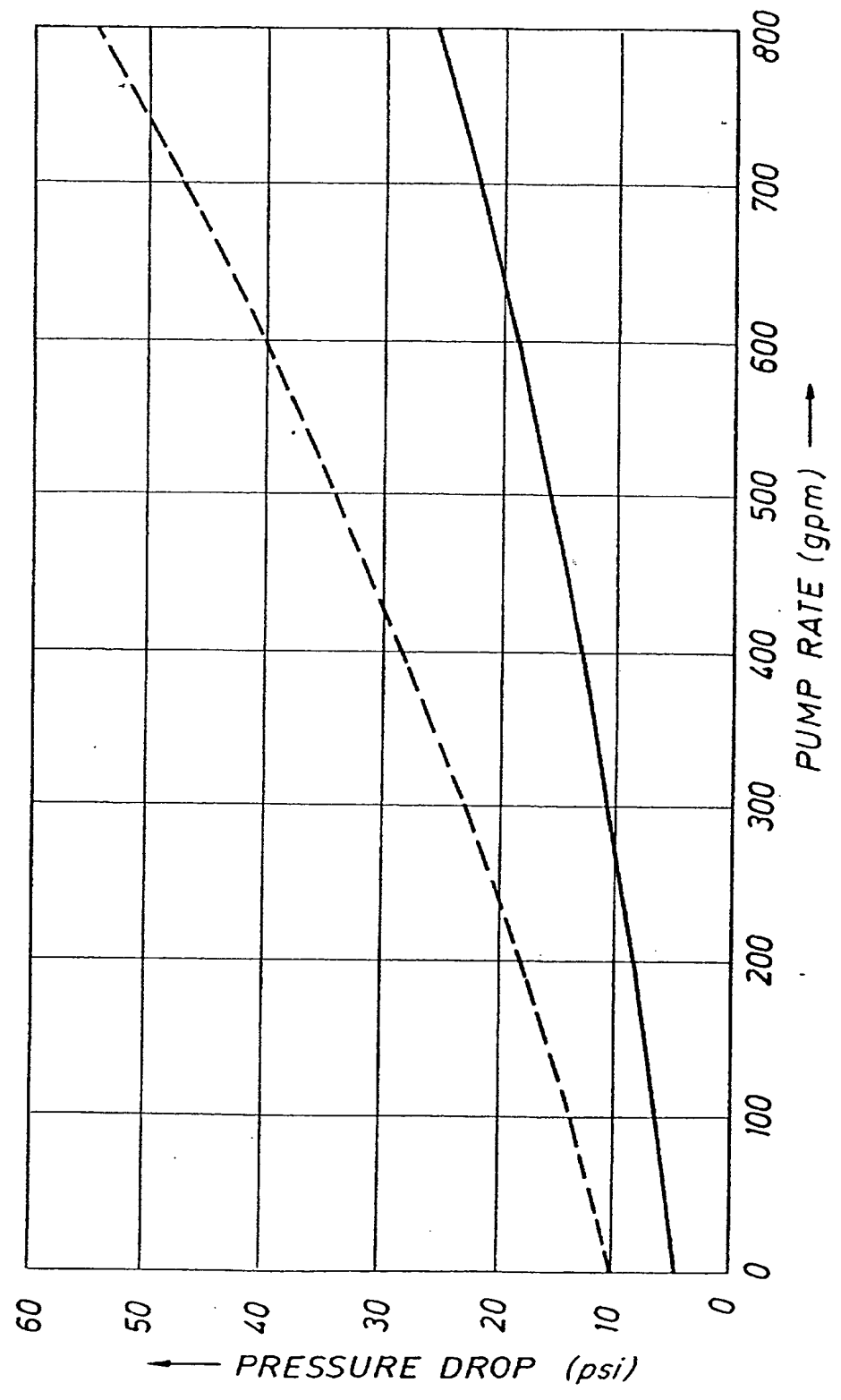


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FIG. 11

16 ppg MUD, 30 cp vis  
10 lb / 100 ft<sup>2</sup> YIELD  
500 gpm BOOSTER PUMP RATE  
291 fpm MAX AV IN 9.6 INCH HOLE  
85 fpm MAX AV IN 20 INCH RISER  
(800 gpm PUMP RATE + 500 gpm BOOSTER PUMP RATE THROUGH HOSE)  
—— 30ft LONG HOSE    - - - 64ft LONG HOSE



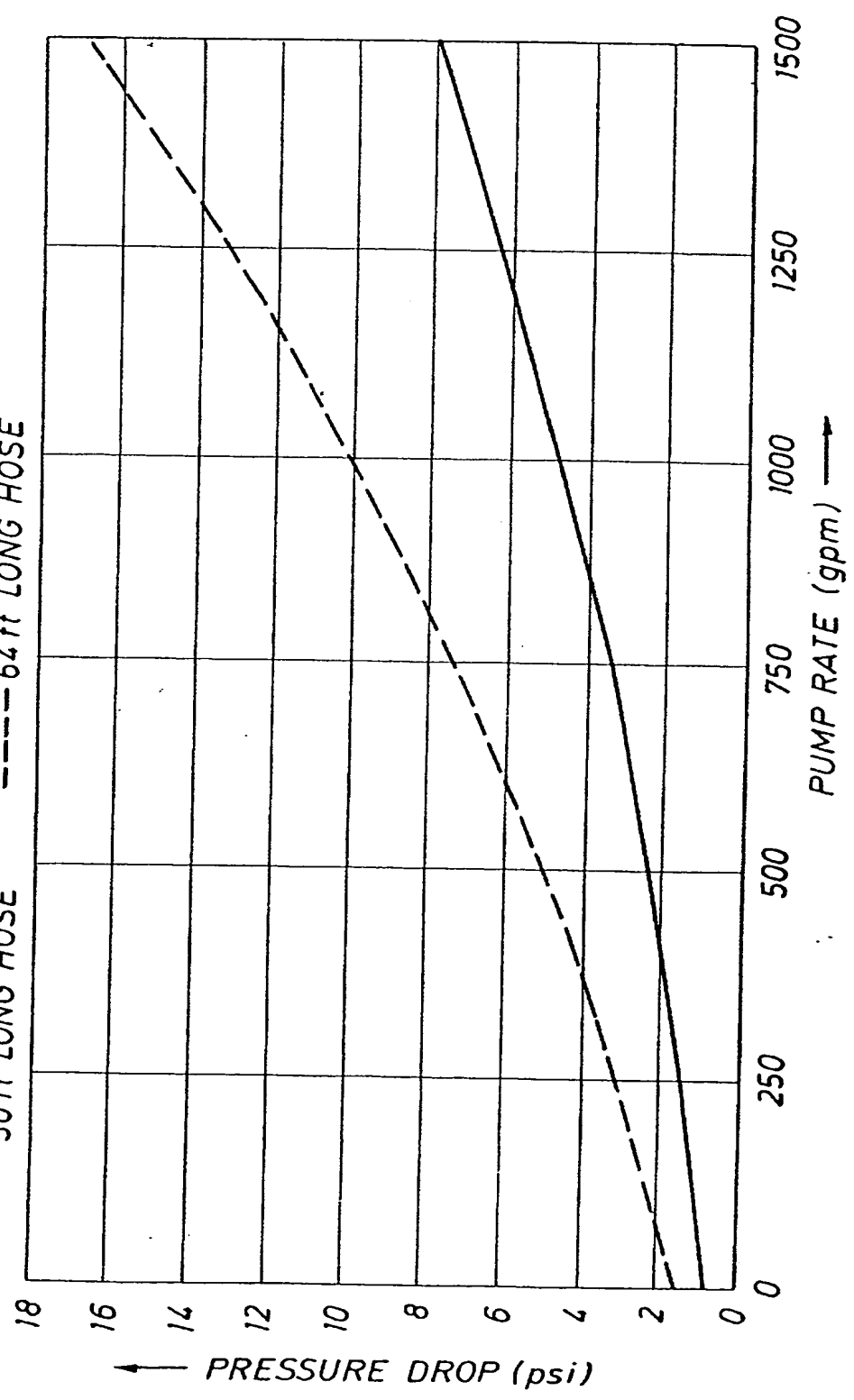
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11/14

FIG. 12

16 ppg MUD, 30 cp vis  
10 lb/100 ft<sup>2</sup> YIELD  
500 gpm BOOSTER PUMP RATE  
125 fpm MAX AV IN 18 INCH HOLE  
131 fpm MAX AV IN 20 INCH RISER  
(1500 gpm PUMP RATE + 500 gpm BOOSTER PUMP RATE THROUGH HOSE)  
—— 30 ft LONG HOSE      - - - - 64 ft LONG HOSE

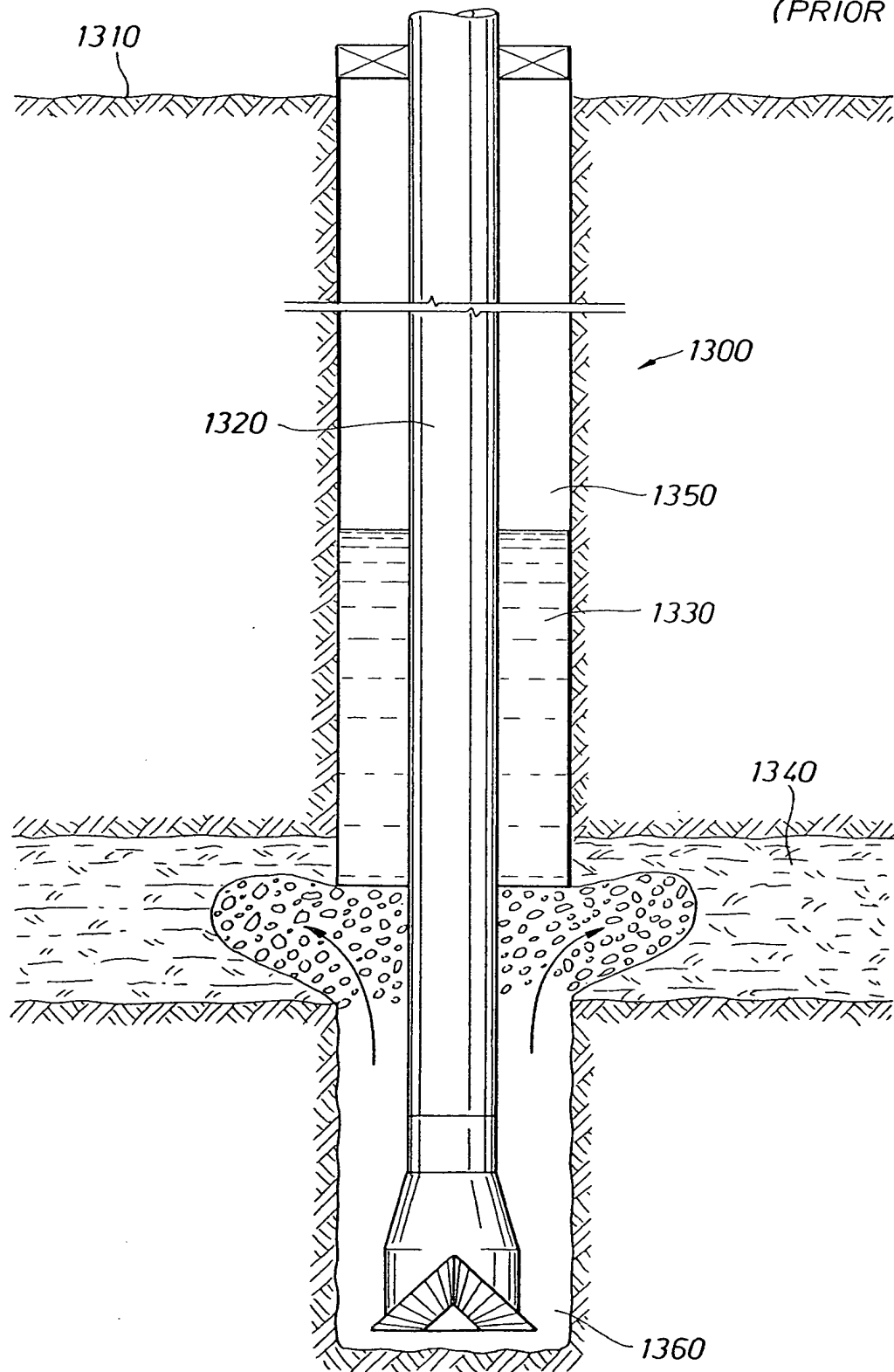


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12/14

**FIG.13**  
(PRIOR ART)



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FIG. 14

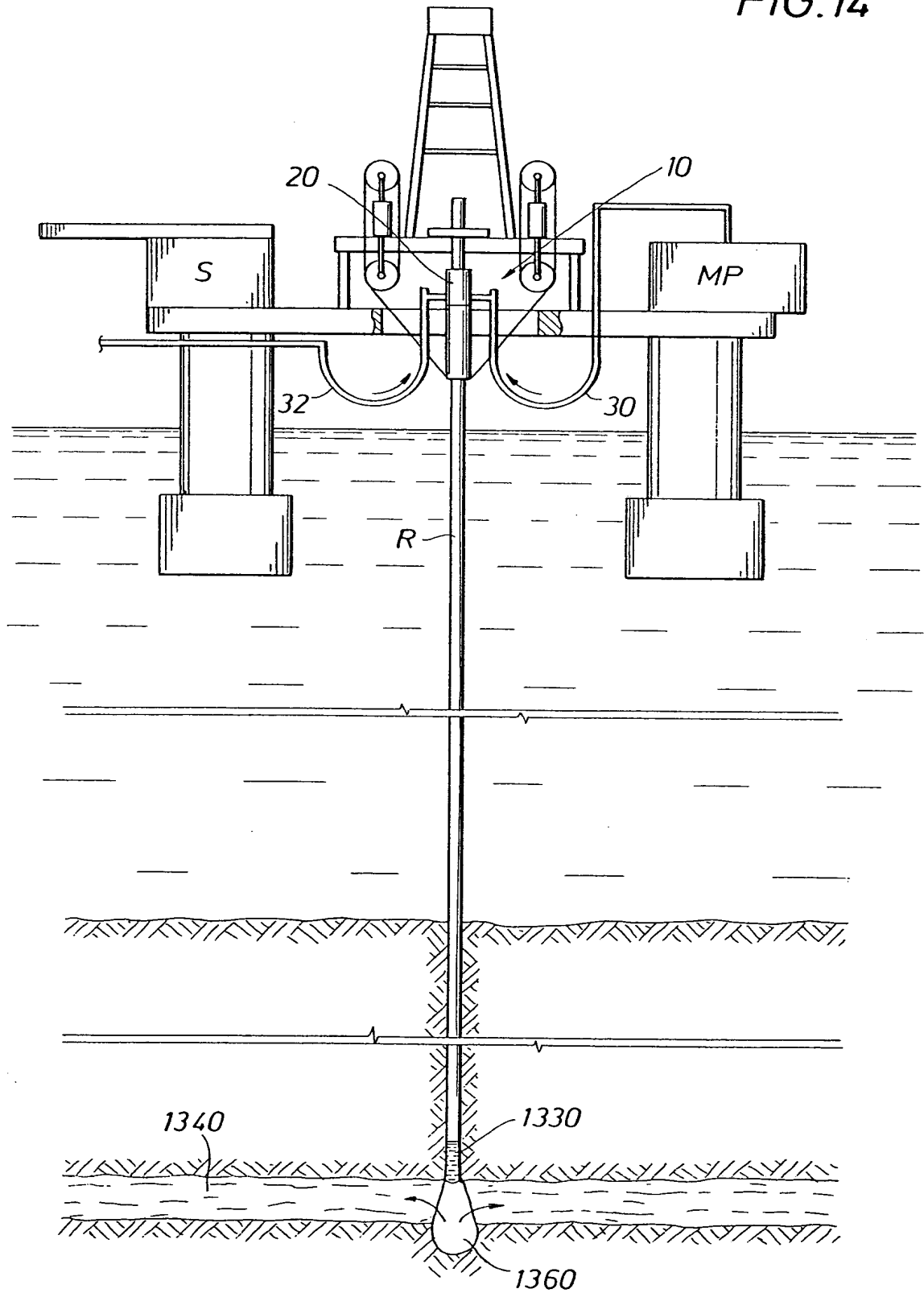


FIG. 15

